

CLAIMS

What is claimed is:

1. A magnetic stirrer (1) comprising a housing (2), which accommodates an electrical stirring drive comprising at least one alternately excitable magnetic coil (3) or electromagnet having a first end and a second end, as well as at least one circuit board (4) having a control circuit with control components for the stirring drive mounted on said board, a top, substantially horizontal contact surface (5) able to accommodate a container holding goods to be stirred as well as a stirring magnet, wherein the magnetic coils (3) are arranged below the contact surface (5) and one of the ends of the faces the contact surface at least one magnetic coil (5) as the driving ends, wherein the driving ends of at least one magnetic coil (3) are approximately flush with at least one circuit board (4) the axial dimension of at least one magnetic coil (3) is less than its diameter, and further comprises a cover (6) made from non-ferromagnetic material placed directly on or over the circuit board (4) and the driving ends of the magnetic coils (3).

2. The magnetic stirrer of claim 1, wherein the driving ends of at least one magnetic coil (3) is arranged in a common plane and are so arranged in the plane of a top side of the at least one control circuit board (4), which faces the contact surface (5) and which is horizontal in an operable position.

3. The magnetic stirrer of claim 1, wherein at least one magnetic coil (3) extends downwards past the at least one control circuit board (4) in an operable position.

4. A magnetic stirrer of claim 1, wherein the at least one magnetic coil (3) arranged with axes parallel to each other and with the driving ends in the same plane engage in a recess (7) or in a through hole in the circuit board (4), filling said recess or through hole up especially to an edge spacing, and comprises a printed circuit of the at least one circuit board (4) directly connected to electrical connections (8) of the at least one magnetic coil (3).

5. The magnetic stirrer of claim 5, wherein the conductor tracks of the printed circuit of the at least one circuit board form through-hole contacts in the region of connections (8) of the at least one electromagnets (3) from a top side to a bottom side of the at least one circuit board and are connected or soldered on the bottom side of the at least one circuit board (4) having control components to the connections (8) of the electromagnet.

6. The magnetic stirrer of claim 1, wherein the at least one magnetic coil (3) are each wound on a plastic sleeve (9) and are arranged between two plastic end covers (10, 11), wherein the plastic cover (10) facing away from the driving end has a grounding plate (12), which connects all of the at least one magnetic coil (3), which is sunk particularly into the plastic covers (10), and which connects a ferromagnetic cores (13) of the at least one magnetic coil (3), which are located within the plastic sleeves (9) holding the windings.

7. The magnetic stirrer of claim 6, wherein the ferromagnetic cores (13) of the at least one magnetic coil (3) reach up to the driving ends and are connected there to pole plates or pole shoes (14), that are especially flush with the plastic end covers (11) and arranged on the driving end and especially with the top side of the at least one circuit board (4).

8. The magnetic stirrer of claim 1, wherein the diameter of the windings of the magnetic coil (3) is approximately two to three times as large as the axial dimension of the at least one magnetic coil.

9. The magnetic stirrer of claim 1, wherein the cover (6) made from non-ferromagnetic material is a film, particularly a plastic film, preferably an adhesive film.

10. The magnetic stirrer of claims 5, wherein the control contacts for the magnetic stirrer (1) are arranged on the top side of the control circuit board (4) and are covered by wherein the cover (6) formed especially as a film and the cover (6) comprises conductive material in the region of the control contacts on its bottom side facing these contacts or is printed with a conductive pattern and further

comprises spacing between this conductive region and the control contacts in an inactive position.

11. The magnetic stirrer of claim 5, wherein the cover (6) or film can be embossed or arched as well as elastically pressed in the region of the control contacts and can be brought into contact with the control contact/s by its conductive bottom side in the embossed region.

12. The magnetic stirrer of claim 1, wherein the housing (2) of the magnetic stirrer (1) is formed from at least one plastic body with a recess (16) for holding the at least one control circuit board (4) and the at least one magnetic coil (3), wherein this plastic body has a border (17) enclosing the recess (16) and is sealed and closed by the cover or film in the usable position.

13. The magnetic stirrer of claim 1, wherein the cover (6) or film is connected or adhered, at least, to the enclosing border (17) of the housing (2), particularly also to the control circuit board (4) and/or the driving ends of the at least one magnetic coil (3) or electromagnets.

14. The magnetic stirrer of claim 13, wherein the border (17) of the housing (2) is arranged in a common plane with the top side of the circuit board (4) and/or the driving ends of the at least one magnetic coil (3).

15. The magnetic stirrer of claim 14, wherein the plastic body acting as a housing (2) has a higher electrical conductivity value relative to conventional conductivity values of plastics and a connection (19) for a grounding line.

16. The magnetic stirrer of claim 14, wherein the housing (2) has an inner housing part (2a) made from hard plastic with the recess or depression (16) for the circuit board (4) and the electromagnets (3) and this inner housing part (2a) is embedded in an outer housing part (2b) made from softer material or plastic.

17. The magnetic stirrer of claim 15, wherein the at least one control circuit board (4) is connected to the housing (2) and/or to the housing part (2a) with the depression (16) by a clamp.

18. The magnetic stirrer of claim 15, wherein projections or pins (20) extend out from the housing part (2a) and in the usable position, these projections tightly engage in matching recesses, holes, or through holes in the circuit board (4).

19. The magnetic stirrer of claim 10, wherein the cover (6) or cover film has a printable and/or writable surface.

20. The magnetic stirrer of claim 12, wherein on the horizontal border (17) of the housing supporting the cover (6) there is a raised, preferably enclosing, sealing edge (18), whose height corresponds approximately to the thickness of the cover (6) or if necessary exceeds it.